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Division of Commercial Fisheries
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Abundance, Age, Sex, and Size Statistics for Sockeye and Chum Salmon in Lower Cook Inlet, 1988

by

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and

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State of Alaska

Steve Cowper, Governor

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ABSTRACT

The 1988 sockeye and chum salmon commercial catch in Lower Cook Inlet was sampled for age, sex, weight, and length. Ten fisheries that target primarily on discrete stocks were examined. A total of 319,008 sockeye and 321,911 chum salmon were harvested in this management area. Another 45,650 sockeye and 174,300 chum salmon were estimated in the escapement.

KEY WORDS: Age, chum, length, Lower Cook Inlet, *Oncorhynchus*, salmon, sex, sockeye, weight

INTRODUCTION

The Lower Cook Inlet salmon management area is comprised of all waters west of the longitude of Cape Fairfield, north of the latitude of Cape Douglas, and south of the latitude of Anchor Point (Figure 1). Purse seine and set gill net are the only legal commercial gear types for salmon. Entry into the commercial fishery was limited in 1972. There were 71 seine and 27 set gill net permits fished during 1988.

Since 1961, catches of all five species of Pacific salmon (*Oncorhynchus*) have been documented in this area. In 1970, the Alaska Department of Fish and Game (ADF&G) began sampling the sockeye and chum salmon catch for age, sex, weight and length (AWL) data. AWL data through 1985 has been summarized by Schroeder (1984, 1985, and 1986) and Morrison (1987). There was no catch sampling program in 1987. Aerial and ground surveys of pink (*O. gorbuscha*), chum (*O. keta*), and sockeye (*O. nerka*) salmon escapements began in 1960, 1964, and 1969, respectively. Historical annual escapement data has been summarized in the Lower Cook Inlet Area Annual Finfish Management Reports (e.g., ADF&G 1987).

Historically, the duration of an individual fishery was between three and six weeks. The sockeye salmon fisheries generally begin in June. The chum salmon fisheries typically end in August. However, there is considerable overlap in the timing of the sockeye and chum fisheries (Table 1). Commercial salmon fishing has begun as early as May for chinook (*O. tshawytscha*) salmon and has ended as late as September for coho (*O. kisutch*) salmon. Current management strategy has established fishing districts which allow for management of discrete stocks. Commercial harvests are monitored so that predetermined escapement goals are met and the escapement is obtained from all segments of the run. In areas where interception fisheries have occurred historically, the fishery has been allowed to continue provided that the harvests are not detrimental to the individual contributing stocks.

The focus of the 1988 Lower Cook Inlet Management Area salmon catch sampling program was on the sockeye and chum salmon catch from the purse seine fisheries. Purse seine catches tend to be stock specific (with the exception of Halibut Cove, Tutka Bay, and Silver Beach) and account for about 97% of the total sockeye and chum catch from Lower Cook Inlet. Chinook, chum and pink salmon were given a very low priority in the AWL sampling program in 1988. The total chinook salmon harvest was < 1% of the total salmon catch, and the coho and pink salmon returns were not expected to exhibit any variation in their annual age compositions. There were also three small set net fisheries which were not sampled since they did not target on any specific stock.

The objectives of the 1988 salmon catch sampling program were to (1) estimate the salmon age composition of the 10 fisheries listed in Table 1, (2) track changes in age composition over time, and (3) develop this information in-season allowing fishery managers time to adjust in-season management of fisheries to reflect unexpected strength or weakness of a particular age group. Estimates of abundance and age composition are also used to prepare a preseason forecast of abundance.

METHODS

The Lower Cook Inlet salmon catch was reported separately for 16 purse seine fisheries, each represented by a discrete stock of sockeye or chum salmon. Each fishery's unique escapement goal was managed independently. Ten of the fisheries were selected for catch sampling in 1988 and each fishery was considered a geographical sampling strata (Table 1, Figures 2 and 3). In past reports, the fisheries were often aggregated by management districts, i.e., Kamishak, Southern, Outer and Eastern (Figure 1). A 1-week period was considered a temporal sampling strata.

The fisheries in Lower Cook Inlet are relatively small. Tenders generally return to port after gathering fish from several fisheries resulting in mixed stock samples. In order to obtain samples from a single stock, a two-person crew onboard a tender collected catch samples as fishermen delivered their catch. Only once, in China Poot Bay, were fish removed from a tender hold for sampling when it became obvious that no deliveries were going to be made during the time that the sampling crew was present. In this case, the tender skipper was interviewed to ascertain that no fish from an earlier sampling period were present.

Fish were usually transferred from a fishing boat to the tender manually with a brailer or mechanically with a pump. Regardless of delivery method, an effort was made to sample every fish being delivered to avoid any possible bias introduced by fishermen presorting their catch. When this was not possible, multiple brail or pump loads of fish were obtained from various segments of the delivery. Every fish within a brailer or cycle of the fish pump was sampled. On the rare occasion when a tender was in port with fish from a single fishery, catch samples were obtained dockside.

Most of the fisheries were open for two 48-h periods per week (i.e., Monday and Tuesday, followed by Thursday and Friday) or for up to 6 d of continuous fishing. Occasionally a fishery was open only for a limited number of hours on a specific date. In each case, most of the catch was typically caught and delivered to a tender during the first day of fishing following a closed period. Priority samples, i.e., fisheries in which the age composition was expected to change with time, were collected on period openings when the likelihood of obtaining a complete sample within a short time frame was greatest. Samples collected on successive days tended to be smaller and were pooled as necessary.

Each fish was measured to the nearest millimeter (from mid-eye to the fork of the tail), weighed to the nearest 0.1 kg, and its sex determined from external secondary sexual characteristics. One scale was collected from the preferred area of each salmon, approximately 3 rows above the lateral line and posterior of the dorsal fin when possible. The scales were cleaned and mounted on a gum card, sculptured side up, from which an acetate impression was made. Images of scales were magnified 35 times, and the number of annuli per scale were counted to determine age. The age designation used was the European system in which the first digit refers to the number of fresh water annuli, the second digit refers to the number of marine annuli, and the total age is the sum of the two digits plus one. For example, an age-1.2 fish is an age-4 fish, having spent its first winter in the gravel as an alevin, migrated to sea at age-2 and having spent 2 years at sea.

Sample sizes were set for each sampling strata to estimate age proportions, p_i , from a population of k age groups simultaneously within a specified distance, d , of their true population age proportions, π_i , 90% of the time ($1 - \alpha$). That is,

$$\Pr \left\{ \bigcap_{i=1}^k | p_i - \pi_i | \leq d \right\} \geq 1 - \alpha,$$

where d and α , the confidence level, was chosen to be 0.05 and 0.10, respectively. Thompson (1987) calculated a maximum sample size of 403 for a worse case scenario when three age classes were present in equal numbers, $d = 0.05$, and $\alpha = 0.10$. Any deviation in the number of age classes or unequal contributions by age class would require a smaller sample size. An a priori estimate of age composition, derived from the length frequency of about 200 males, was used to calculate a sample size n such that

$$\sum \alpha_i < \alpha \quad (\alpha = 0.10), \quad (1)$$

$$\text{where } \alpha_i = 2(1 - \Phi(z_i)), \quad (2)$$

$$\Phi(z_i) = \text{area under the standard normal distribution,}$$

$$\text{and } z_i = d \sqrt{n_i / (p_i(1-p_i))}. \quad (3)$$

The smallest n that satisfied equations (1)-(3) was rounded up to the nearest 40 fish (salmon scales are mounted on gum cards in groups of 40), increased by the observed unreadable rate, and rounded again up to the nearest 40 fish. This represented the total numbers of fish to process.

Twenty-five sampling trips were made. The results from 12 trips were pooled into five samples to obtain the desired sample size. After pooling, half of the 18 samples (13 single and 5 pooled samples) met or exceeded the 95% confidence level. Another four had confidence levels of at least 90%. The remaining five samples had confidence levels ranging from 80% to 89%. These five samples were not pooled with others because, in one instance, it was the only available sample and in the other four instances, samples collected earlier from the same fishery already provided confidence levels in excess of 90% (Table 2).

Sample size, n , for mean weight of each sex were determined from the methods described by Snedecor and Cochran (1967), i.e.,

$$n = 4 \sigma^2 / L^2,$$

where σ = population standard deviation, and

L = allowable error, i.e., 0.1 kg.

Samples sizes for mean weights ranged between 5 and 50 depending on σ . Most sample sizes were around 20, or 1 in 10 fish, for a 200 fish sample of a each sex.

Estimates of standard errors by age class were derived according to the procedures for stratified random sampling described by Snedecor and Cochran (1967).

$$SE = \sqrt{(\sum C_h^2 * s_h^2 / n_h)},$$

where C_h^2 = the herring catch in the h th stratum, and

s_h^2 = the sample variance in the h th stratum.

A chi-square test of a contingency table for age categories by location was used to test the hypothesis that both samples were from the same multinomial population. The null hypothesis was rejected at the $\alpha = 0.05$ or 95% level. Catch totals were obtained from harvest receipts (fish tickets) which document each sale by a licensed fisherman. Escapement estimates were derived from aerial and ground surveys.

RESULTS AND DISCUSSION

Sockeye Salmon

A total of 319,008 sockeye were harvested in the Lower Cook Inlet Management Area in 1988. The sockeye escapement was estimated to be 45,650 from aerial and ground surveys. Of the seven purse seine fisheries where sockeye catches were greater than 1,000 fish, five were examined: Aialik Lake, Nuka Bay, China Poot Bay, Chenik Lake, and Mikfik Creek. Sockeye from Tutka Bay and Douglas River were not sampled as they did not represent any specific local stock. Altogether there were 3,716 readable scales collected. Individual sample sizes and dates are summarized in Table 2.

The total sockeye harvest from Aialik Bay was 20,245. With an escapement estimate of 13,000 fish, the total run was approximately 33,245 salmon. Only one catch sample was collected on 27 June, from the early half of the run. The four dominant age classes were 1.2, 1.3, 2.2, and 2.3. Mean weight of 2.74 kg was near average for this fishery. Over 62% of the samples were female (Table 3).

The total sockeye harvest from Nuka Bay was 9,182 fish. Most of these sockeye were bound for Desire Lake since the Delight Lake run did not materialized. The escapement to the two lakes were approximately 9,000 and 1,200 sockeye, respectively. Only one sample was collected from this fishery on 28 June. None of the scales in this sample were from the preferred area and about a dozen fish in the second half of this sample may have been sockeye caught in Halibut Cove. This sample was obtained while 1,000 sockeye and 50 chum salmon were being transferred from a small to a larger tender for movement to a shore-based processor. The pump on the small tender was an older design that removed most of the scales from the fish as they went through the pump. Consequently, few of the scales in this sample were from the preferred area. Unknown to the sampling crew, the big tender already had 100 sockeye salmon from the Halibut Cove fishery in its main tank prior to receiving fish from the Nuka Bay fishery. The first half of the sample came directly from the smaller tender. The second half consisted of fish placed into and pumped back out of the main hold on the big tender. When the catch samplers began to notice that some of the sockeye from the main hold had most of their scales present, the tender crew made a remark about how the other tender's inferior pump removed scales from the fish. From that remark, the catch samplers became aware of the Halibut Cove fish and stopped

sampling. If the presence of scales can be used as an indication of Halibut Cove fish, then about a dozen of the 327 fish sample may not have been from Nuka Bay. In this sample the four main age groups were 1.2, 1.3, 2.2, and 2.3. The Nuka Bay mean weight of 2.87 kg was the highest among the Lower Cook Inlet sockeye. Over 56% of the samples were female (Table 4).

The sockeye run to China Poot Bay (Leisure Lake) supported the second largest sockeye fishery in Lower Cook Inlet during 1988. This run resulted from a lake stocking program. Because this lake does not provide access for returning sockeye salmon every fish was harvested in this terminal fishery. The total commercial sockeye harvest within China Poot Bay was 63,550. In addition, 2,000 were caught in the sport and personal use fisheries. Four other commercial fisheries adjacent to China Poot Bay reported the following sockeye catches: 1,419 in Halibut Cove Lagoon, 16,000 and 4,500 immediately seaward of Halibut Cove and China Poot Bay from purse seines and set nets, respectively, and 6,000 in Tutka Bay. When these catches were added to the China Poot Bay catch, the total commercial sockeye harvest in this area was 91,469.

The China Poot Bay fishery was open to fishing for 5 d a week since this fishery has no escapement goal. Consequently, this fishery was sampled midweek when most of the other fisheries could not be sampled. As a result, five sampling trips were made, with the data pooled into two sample periods. A total of 989 readable scales were collected. Although the 1.2 and 2.2 age groups dominated both sample periods, there was more diversity in the age composition during the latter half of the fishery. Mean weights by age class decreased with time, from 2.46 kg to 1.92 kg. There was a corresponding shift in the sex ratio from 40% to 51% female (Table 5).

The largest sockeye fishery in Lower Cook Inlet during 1988 was Chenik Lake, the result of a lake stocking and fish ladder construction program. The total harvest and estimated escapement was 164,160 and 9,000 sockeye, respectively. Four sampling trips were made, with results pooled into three sample periods. Three age groups were predominant: 1.2, 1.3, and 2.2. Mean weights also decreased with time in this fishery, from 2.75 kg to 2.16 kg to 1.79 kg. There was no corresponding pattern in the sex composition which shifted from 62% to 45% to 58% female during the three sampling periods (Table 6). There was no discernable shift in age composition over time.

The Mikfik creek fishery harvested 14,640 sockeye salmon. The escapement was estimated to be 10,100 sockeye. Three sampling trips were made, with results pooled into two sampling periods. Two age groups, 1.2 and 1.3, dominated. Mean weights increased with time, from 1.86 kg to 1.94 kg. More females appeared later in the season, shifting from 47% to 57% over time (Table 7). The proportion of age 1.3 and 2.3 fish was also greater during the first sampling period.

Chum Salmon

A total of 321,911 chum salmon were harvested in Lower Cook Inlet, and another 174,300 were estimated in the escapement. Of the nine purse seine fisheries targeting on chum salmon with harvests of over 1,000 fish, five were studied: Tonsina Creek, Port Dick, Cottonwood-Iniskin, McNeil River, and Silver Beach. Tutka Bay was not sampled because the small daily catches would have required many sampling trips, disproportionate to the size of the run. Petrof was not sampled due to a conflict with sampling at two concurrent fisheries. Nuka Bay

was not sampled because it was not stock specific. Chenik, which does not have a run of chum salmon, was not sampled because the chum salmon harvested were assumed to be from McNeil River. A total of 3,317 readable scales were collected. Individual sample sizes and dates are summarized in Table 2.

A total of 23,881 chum salmon were harvested from Tonsina Creek and another 9,100 were estimated in the escapement. Samples were collected on the 18 and 25 July. Ages 0.3 and 0.4 dominated the samples and there was a shift toward more 0.3 fish in the later sample. Corresponding mean weights also decreased from 4.05 kg to 3.75 kg along with mean age. There were more females than males in both samples (Table 8).

A total of 64,398 chum salmon were harvested from Port Dick Bay with 18,800 estimated in the escapement to the three river systems in the bay. Samples were collected on 7 July and 4 August. Ages groups 0.3 and 0.4 dominated the catch. Although the percentage of the 0.3 age class was greater in the second sample, the 0.4 age group was still in the majority. Mean weights decreased with time from 4.31 kg to 3.97 kg. There were more females than males in both sample periods (Table 9).

A total of 39,240 chum salmon was harvested from Cottonwood and Iniskin Bays. The estimated escapements were 16,000 in Cottonwood and 9,500 in Iniskin Bay. Three sampling trips were made on 28 July, 8 and 15 August with the results pooled into one sample period. Ages 0.3 and 0.4 were predominant. Mean weights were 4.33 kg, and there were more females than males in the sample (Table 10).

The largest chum salmon fishery in Lower Cook Inlet was McNeil River with a total harvest of 103,952 chum salmon. Included in this harvest were 9,682 chum caught in the Silver Beach area between 24 June and 16 July; 16,207 chum harvested in the Kamishak District between 19 June and 14 July; and 7,426 chums taken in the Chenik area. The McNeil escapement was estimated at 49,000 chum salmon. McNeil catch samples were collected on 22 June, 11 July, and 19 July. As expected, the 0.4 age group was prevalent throughout all samples, ranging from 76% to 87% of the total. The proportion of the 0.5 age group decreased over time from 12% to 7% to 2%. As expected, mean weights also decreased with time from 5.08 kg to 4.27 kg to 3.86 kg. McNeil River was unusual in that the sex ratio changed from predominantly male (62%) early in the season to predominantly female (59%) late in the season (Table 11).

Because escapements in Silver Beach streams were too small to account for the 19,652 chum salmon harvested, the chum harvest from Silver Beach is believed to be composed largely of McNeil and Kamishak River chums. We assumed that the McNeil stocks had a greater mean weight than the Kamishak stocks (Tables 11 and 12). Thus, the early Silver Beach catch of 9,682 reported between 26 June and 16 July was assigned to the McNeil River because of their greater mean weight. The remaining catch of 9,970 between 19 and 22 July was assigned to the Kamishak River (Table 12). The first 29,659 chum harvested in the Kamishak area between 19 June and 14 July were assigned to the McNeil River while the remaining 16,207 was assigned to the Kamishak River (Table 12).

One catch sample of Silver Beach chum salmon was collected on 11 July. The age composition of this sample was statistically different ($\chi^2 = 67.97$, 12 d.f., $p < .005$) from McNeil River chum age compositions from the same date. The age compositions were 33%, 64%, and 2% in the Silver Beach samples (Table 13) versus

8%, 87%, and 5% in the McNeil samples for age groups 0.3, 0.4, and 0.5 (Table 11), respectively. The difference in the two age compositions on the same date could be explained by a delay in run timing. Three days later, there was a closer match in the Silver Beach and McNeil age compositions when the McNeil age composition was 22% age 0.3, 76% age 0.4, and 2% age 0.5 (Table 11).

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Table 1. Daily catch of sockeye and chum salmon in Lower Cook Inlet, 1988.

Sockeye							Chum				
Date	Aialik Bay	Nuka Bay	China Bay	Poot Bay	Chenik Lake	Mikfik Creek	Tonsina Creek	Port Dick	Cottonwood -Iniskin	McNeill River	Silver Beach
Jun 3 Fri						4,419					
4 Sat						3,350				1	
6 Mon						1,264				1	
7 Tue						893				3	
8 Wed						857				2	
9 Thu						256				4	
18 Fri					500						
19 Sun						189				739	
20 Mon					1,079	3,006				72	
21 Tue					317	107				97	
22 Wed					2,356	253				558	
23 Thu					3,054	43				51	
24 Fri					3,829	3				186	
25 Sat					997					1,045	
26 Sun					11,350					45	2
27 Mon	7,172	1,654		1,491	11,351					2,083	
28 Tue	18	249		494	4,409					54	
29 Wed		19		905	5,566					1	
30 Thu	4,230	799		1,063	7,400			3,476		10,620	
Jul 1 Fri	45	369		4,194	10,016			1,392		18,885	
2 Sat		231		416	10,252					6,861	
4 Mon		1,531		5,112				4,754			
5 Tue		594		1,839	7,986			3,124		1	
6 Wed		122		2,675	4,506					6	
7 Thu		647		770	13,377			1,416		2,851	2,849
8 Fri	110	842		2,565	4,941			2,461		1,632	314
9 Sat		296		35	8,174			1,681		120	
11 Mon				10,611	17,044		7,496	1,201		25,934	3,141
12 Tue	4	712		3,265	7,741			305		10,804	575
13 Wed				5,502	1,637					262	
14 Thu		580		1,794	5,959			2,133		8,004	
15 Fri		478		2,900	3,049			440		2,668	2,636
16 Sat				145	47					165	165

-Continued-

Table 1. (page 2 of 2)

Date	Sockeye					Chum				
	Aialik Bay	Nuka China Bay	Poot Bay	Chenik Lake	Mikfik Creek	Tonsina Creek	Port Dick	Cottonwood -Iniskin	McNeil River	Silver Beach
Jul 18 Mon	5,334		7,034	3,900		8,074	12,735			
19 Tue	2,115	59	1,057	4,901			1,087		4,754	1,915
20 Wed	40		831	2,932			37		229	
21 Thu			1,919	983		7,209	817		4,038	4,236
22 Fri			1,609	4,507			700		1,101	3,819
23 Sat			382				53			
25 Mon			4,920			1,102	2,102		65	
26 Tue	891						1,461			
27 Wed	154									
28 Thu	45						6,949	3,149	10	
29 Fri	87						2,705	5,137		
30 Sat							41	458		
Aug 1 Mon								221		
2 Tue								2,106		
3 Wed								215		
4 Thu							10,119	3,992		
5 Fri							3,209	2,315		
6 Sat								290		
8 Mon								7,763		
9 Tue								3,900		
10 Wed								116		
11 Thu								1,824		
12 Fri								867		
15 Mon								3,746		
16 Tue								513		
22 Mon								2,470		
23 Tue								158		
total	20,245	9,182	63,528	164,160	14,640	23,881	64,398	36,099	103,952	19,652

Table 2. Sample sizes of readable salmon scales and corresponding simultaneous confidence levels for Lower Cook Inlet, 1988.

Species	Fishery	Dates	Sample Size	Simultaneous Confidence Level	Fraction Unreadable Scales
Sockeye	Aialik	6/27	464	94	0.16
	Nuka	6/27	327	87	0.18
	China Poot	6/05-6/08	490	96	0.12
		6/20-6/27	489	96	0.14
	Chenik	6/20-6/22	494	99	0.11
		7/05	410	99	0.15
		7/15-7/18	337	95	0.06
	Mikfik	6/03	410	92	0.12
		6/06-6/22	295	83	0.08
Chum	Tonsina	7/18	430	95	0.05
		7/25	318	86	0.12
	Port Dick	7/21-7/27	461	95	0.14
		8/04	368	89	0.09
	Cottonwood	7/29-8/15	409	92	0.17
	McNeil	6/22	400	99	0.08
		7/11	333	99	0.08
		7/19	193	80	0.17
	Silver Beach	7/11	405	93	0.19

Table 3. Age, sex, and size composition of sockeye salmon commercial catch in Aialik Bay, 1988.

	Age Group					Total
	0.3	1.2	1.3	2.2	2.3	
Sample period:	27 June					
Males		2,531	3,184	393	1,440	7,548
Percent		12.50	15.73	1.94	7.11	37.28
Mean Length		517	581	512	581	556
Std. Error		3	4	10	5	2
Sample Size		58	73	9	33	173
Mean Weight		2.44	3.37	1.55	3.76	3.04
Std. Error		0.19	0.35		0.17	0.16
Sample Size		6	9	1	4	20
Females	44	4,800	4,799	742	2,312	12,697
Percent	0.22	23.71	23.70	3.67	11.42	62.72
Mean Length	516	502	555	506	564	534
Std. Error		2	2	9	3	1
Sample Size	1	110	110	17	53	291
Mean Weight		1.88	2.91	2.20	3.40	2.57
Std. Error		0.13	0.31	0.50	0.13	0.13
Sample Size		13	7	2	3	25
Both Sexes	44	7,331	7,983	1,135	3,752	20,245
Percent	0.22	36.21	39.43	5.61	18.53	100.00
Mean Length	516	507	565	508	571	542
Std. Error		2	2	7	3	1
Sample Size	1	168	183	26	86	464
Mean Weight		2.07	3.09	1.97	3.54	2.74
Std. Error		0.11	0.23	0.50	0.10	0.10
Sample Size		19	16	3	7	45

Table 4. Age, sex, and size composition of sockeye salmon commercial catch in Nuka Bay, 1988.

	Age Group								Total
	1.2	2.1	1.3	2.2	2.3	3.2	2.4	3.3	
Sample period:	28 June								
Males	281		1,123	562	1,993			28	3,987
Percent	3.06		12.23	6.12	21.71			0.30	43.42
Mean Length	507		573	537	582			570	568
Std. Error	5		3	5	3				2
Sample Size	10		40	20	71			1	142
Mean Weight	2.20		3.53	2.33	3.55				3.28
Std. Error	0.45		0.10	0.47	0.25				0.15
Sample Size	2		3	2	6				13
Females	674	28	1,544	1,011	1,854	28	28	28	5,195
Percent	7.34	0.30	16.82	11.01	20.19	0.30	0.30	0.30	56.58
Mean Length	500	325	558	508	559	503	506	565	539
Std. Error	5		3	4	3				2
Sample Size	24	1	55	36	66	1	1	1	185
Mean Weight	2.45		2.69	1.83	2.89		1.95		2.56
Std. Error	0.20		0.37	0.12	0.17				0.13
Sample Size	2		4	6	5		1		18
Both Sexes	955	28	2,667	1,573	3,847	28	28	56	9,182
Percent	10.40	0.30	29.05	17.13	41.90	0.30	0.30	0.61	100.00
Mean Length	502	325	564	519	571	503	506	568	551
Std. Error	4		2	3	2				1
Sample Size	34	1	95	56	137	1	1	2	327
Mean Weight	2.38		3.04	2.01	3.23		1.95		2.87
Std. Error	0.19		0.22	0.19	0.15				0.10
Sample Size	4		7	8	11		1		31

Table 5. Age, sex, and size composition of sockeye salmon commercial catch in China Poot Bay, 1988.

	Age Group							
	1.1	1.2	2.1	1.3	2.2	1.4	2.3	Total
Sample Period 1: 5 - 12 July								
Males		6,219	217	1,157	12,801		1,012	21,406
Percent		17.55	.61	3.27	36.13		2.86	60.41
Mean Length		500	425	532	512		544	510
Std. Error		2	56	8	2		5	1
Sample Size		86	3	16	177		14	296
Mean Weight		2.41	5.65		2.61			2.58
Std. Error		.17			.21			.15
Sample Size		7	1		8			16
Females		3,544		1,229	8,967		289	14,029
Percent		10.00		3.47	25.31		.82	39.59
Mean Length		502		553	510		528	512
Std. Error		2		5	1		22	1
Sample Size		49		17	124		4	194
Mean Weight					2.19			2.19
Std. Error					.18			.18
Sample Size					11			11
Both Sexes		9,763	217	2,386	21,768		1,301	35,435
Percent		27.55	.61	6.73	61.43		3.67	100.00
Mean Length		501	425	543	511		541	511
Std. Error		2	56	4	1		6	1
Sample Size		135	3	33	301		18	490
Mean Weight		2.41	5.65		2.44			2.46
Std. Error		.17			.15			.12
Sample Size		7	1		19			27

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Table 5. (page 2 of 3)

	Age Group							
	1.1	1.2	2.1	1.3	2.2	1.4	2.3	Total
Sample Period 2: 13 - 27 July								
Males	1,126	6,643	957	169	4,448		394	13,737
Percent	4.01	23.65	3.41	.60	15.83		1.40	48.90
Mean Length	351	497	369	552	502		552	480
Std. Error	4	2	8	5	4		8	2
Sample Size	20	118	17	3	79		7	244
Mean Weight	.70	2.35	.93	2.70	2.00		2.83	2.02
Std. Error	.06	.41	.07		.31		.03	.22
Sample Size	3	13	3	1	3		2	25
Females	56	8,332	113	338	5,236	56	225	14,356
Percent	.20	29.66	.40	1.20	18.64	.20	.80	51.10
Mean Length	340	490	441	544	503	632	522	496
Std. Error		2	56	7	2		21	1
Sample Size	1	148	2	6	93	1	4	255
Mean Weight		1.77			1.87		2.20	1.81
Std. Error		.06			.08			.05
Sample Size		13			11		2	26
Both Sexes	1,182	14,975	1,070	507	9,684	56	619	28,093
Percent	4.21	53.31	3.81	1.80	34.47	.20	2.20	100.00
Mean Length	351	493	377	547	503	632	541	488
Std. Error	4	1	9	5	2		9	1
Sample Size	21	266	19	9	172	1	11	499
Mean Weight	.70	2.03	.93	2.70	1.93		2.60	1.92
Std. Error	.06	.18	.07		.15		.03	.11
Sample Size	3	26	3	1	14		4	51

-Continued-

Table 5. (page 3 of 3)

	Age Group							
	1.1	1.2	2.1	1.3	2.2	1.4	2.3	Total
All Periods Combined								
Males	1,126	12,862	1,174	1,326	17,249		1,406	35,143
Percent	1.77	20.25	1.85	2.09	27.15		2.21	55.32
Mean Length	351	498	379	534	510		546	498
Std. Error	4	2	12	7	1		4	1
Sample Size	20	204	20	19	256		21	540
Mean Weight	.70	2.38	1.80	2.70	2.45		2.83	2.35
Std. Error	.06	.23	.07		.18		.03	.13
Sample Size	3	20	4	1	11		2	41
Females	56	11,876	113	1,567	14,203	56	514	28,385
Percent	.09	18.69	.18	2.47	22.36	.09	.81	44.68
Mean Length	340	494	441	551	507	632	525	504
Std. Error		1	56	4	1		15	1
Sample Size	1	197	2	23	217	1	8	449
Mean Weight		1.77			2.07		2.20	1.96
Std. Error		.06			.12			.08
Sample Size		13			22		2	37
Both Sexes	1,182	24,738	1,287	2,893	31,452	56	1,920	63,528
Percent	1.86	38.94	2.03	4.55	49.51	.09	3.02	100.00
Mean Length	351	496	385	543	509	632	541	501
Std. Error	4	1	12	4	1		5	1
Sample Size	21	401	22	42	473	1	29	989
Mean Weight	.70	2.14	1.80	2.70	2.28		2.60	2.19
Std. Error	.06	.14	.07		.11		.03	.08
Sample Size	3	33	4	1	33		4	78

Table 6. Age, sex, and size composition of sockeye salmon commercial catch in Chenik Lake, 1988.

	Age Group						
	1.2	2.1	1.3	2.2	1.4	2.3	Total
Sample Period 1: 21 - 27 June							
Males	3,103	141	9,659	423		71	13,397
Percent	8.91	.40	27.73	1.21		.20	38.46
Mean Length	503	386	566	523		573	548
Std. Error	4	17	2	6			2
Sample Size	44	2	137	6		1	190
Mean Weight	2.18	.90	3.48				3.14
Std. Error	.17		.25				.19
Sample Size	8	1	12				21
Females	3,455		16,571	1,410			21,436
Percent	9.92		47.57	4.05			61.54
Mean Length	486		539	503			528
Std. Error	4		1	6			1
Sample Size	49		235	20			304
Mean Weight	2.20		2.61	2.30			2.52
Std. Error	.20		.06				.05
Sample Size	5		22	1			28
Both Sexes	6,558	141	26,230	1,833		71	34,833
Percent	18.83	.40	75.30	5.26		.20	100.00
Mean Length	494	386	549	508		573	536
Std. Error	3	17	1	5			1
Sample Size	93	2	372	26		1	494
Mean Weight	2.19	.90	2.93	2.30			2.75
Std. Error	.13		.10				.08
Sample Size	13	1	34	1			49

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Table 6. (page 2 of 4)

	Age Group						
	1.2	2.1	1.3	2.2	1.4	2.3	Total
Sample Period 2: 28 June - 9 July							
Males	3,925		36,445	1,121	187	187	41,865
Percent	5.12		47.56	1.46	.24	.24	54.63
Mean Length	496		563	502	602	586	556
Std. Error	6		2	6			2
Sample Size	21		195	6	1	1	224
Mean Weight	1.70		2.48	1.95			2.39
Std. Error	.17		.07				.06
Sample Size	3		24	1			28
Females	4,485		27,847	1,682		748	34,762
Percent	5.85		36.34	2.20		.98	45.37
Mean Length	488		538	485		565	529
Std. Error	4		2	9		16	1
Sample Size	24		149	9		4	186
Mean Weight	1.48		1.92				1.86
Std. Error	.09		.06				.06
Sample Size	4		11				15
Both Sexes	8,410		64,292	2,803	187	935	76,627
Percent	10.98		83.90	3.66	.24	1.22	100.00
Mean Length	491		552	492	602	569	544
Std. Error	3		1	6		16	1
Sample Size	45		344	15	1	5	410
Mean Weight	1.58		2.24	1.95			2.16
Std. Error	.09		.05				.04
Sample Size	7		35	1			43

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Table 6. (page 3 of 4)

	Age Group						
	1.2	2.1	1.3	2.2	1.4	2.3	Total
Sample Period 3: 10 - 18 July							
Males	2,815	938	17,046	1,407		156	22,362
Percent	5.34	1.78	32.35	2.67		.30	42.43
Mean Length	494	368	569	508		589	547
Std. Error	4	6	2	5			2
Sample Size	18	6	109	9		1	143
Mean Weight	1.20		2.34	2.00			2.17
Std. Error			.11				.09
Sample Size	2		13	1			16
Females	5,942		21,269	2,971		156	30,338
Percent	11.28		40.36	5.64		.30	57.57
Mean Length	480		531	486		539	517
Std. Error	3		2	3			1
Sample Size	38		136	19		1	194
Mean Weight	1.21		1.66	1.20			1.53
Std. Error	.07		.13				.09
Sample Size	6		11	1			18
Both Sexes	8,757	938	38,315	4,378		312	52,700
Percent	16.62	1.78	72.70	8.31		.59	100.00
Mean Length	485	368	548	493		564	530
Std. Error	2	6	1	3			1
Sample Size	56	6	245	28		2	337
Mean Weight	1.21		1.96	1.46			1.79
Std. Error	.07		.09				.06
Sample Size	8		24	2			34

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Table 6. (page 4 of 4)

	Age Group						
	1.2	2.1	1.3	2.2	1.4	2.3	Total
All Periods Combined							
Males	9,843	1,079	63,150	2,951	187	414	77,624
Percent	6.00	.66	38.47	1.80	.11	.25	47.29
Mean Length	498	370	565	508	602	585	552
Std. Error	3	5	1	3			1
Sample Size	83	8	441	21	1	3	557
Mean Weight	1.71	.90	2.60	1.98			2.46
Std. Error	.12		.06				.05
Sample Size	13	1	49	2			65
Females	13,882		65,687	6,063		904	86,536
Percent	8.46		40.01	3.69		.55	52.71
Mean Length	484		536	490		561	525
Std. Error	2		1	3		16	1
Sample Size	111		520	48		5	684
Mean Weight	1.54		2.01	1.55			1.91
Std. Error	.06		.05				.04
Sample Size	15		44	2			61
Both Sexes	23,725	1,079	128,837	9,014	187	1,318	164,160
Percent	14.45	.66	78.48	5.49	.11	.80	100.00
Mean Length	490	370	550	496	602	568	538
Std. Error	2	5	1	3		16	1
Sample Size	194	8	961	69	1	8	1,241
Mean Weight	1.61	.90	2.30	1.71			2.17
Std. Error	.06		.04				.03
Sample Size	28	1	93	4			126

Table 7. Age, sex, and size composition of sockeye salmon commercial catch in Mikfik Creek, 1988.

	Age Group				Total
	1.2	1.3	2.2	2.3	
Sample Period 1: 2 - 5 June					
Males	1,535	2,331	189	38	4,093
Percent	19.76	30.00	2.43	.49	52.68
Mean Length	461	508	489	525	490
Std. Error	2	2	14	31	2
Sample Size	81	123	10	2	216
Mean Weight	1.59	2.18	1.53		1.93
Std. Error	.08	.05	.03		.04
Sample Size	16	29	2		47
Females	1,440	2,046	171	19	3,676
Percent	18.54	26.34	2.20	.24	47.32
Mean Length	455	508	467	498	485
Std. Error	2	2	10		1
Sample Size	76	108	9	1	194
Mean Weight	1.46	2.02	1.63		1.78
Std. Error	.06	.06	.13		.04
Sample Size	13	23	2		38
Both Sexes	2,975	4,377	360	57	7,769
Percent	38.29	56.34	4.63	.73	100.00
Mean Length	458	508	479	516	488
Std. Error	2	1	9	31	1
Sample Size	157	231	19	3	410
Mean Weight	1.53	2.11	1.58		1.86
Std. Error	.05	.04	.06		.03
Sample Size	29	52	4		85

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Table 7. (page 2 of 3)

	Age Group				
	1.2	1.3	2.2	2.3	Total
Sample Period 2: 6 - 22 June					
Males	1,141	1,561	163	93	2,958
Percent	16.61	22.72	2.37	1.35	43.05
Mean Length	462	518	467	511	493
Std. Error	3	2	6	12	2
Sample Size	49	67	7	4	127
Mean Weight	1.75	2.25	1.53	2.50	2.03
Std. Error		.07	.18		.04
Sample Size	1	12	2	1	16
Females	1,980	1,700	210	23	3,913
Percent	28.82	24.74	3.06	.33	56.95
Mean Length	460	515	471	532	485
Std. Error	2	2	6		1
Sample Size	85	73	9	1	168
Mean Weight	1.54	2.33	1.50		1.88
Std. Error	.06	.16	.05		.08
Sample Size	8	3	2		13
Both Sexes	3,121	3,261	373	116	6,871
Percent	45.42	47.46	5.43	1.69	100.00
Mean Length	460	516	469	515	488
Std. Error	2	2	4	12	1
Sample Size	134	140	16	5	295
Mean Weight	1.62	2.29	1.51	2.50	1.94
Std. Error	.06	.09	.08		.05
Sample Size	9	15	4	1	29

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Table 7. (page 3 of 3)

	Age Group				Total
	1.2	1.3	2.2	2.3	
All Periods Combined					
Males	2,676	3,892	352	131	7,051
Percent	18.28	26.58	2.40	.89	48.16
Mean Length	462	512	479	515	491
Std. Error	2	1	8	12	1
Sample Size	130	190	17	6	343
Mean Weight	1.66	2.21	1.53	2.50	1.97
Std. Error	.08	.04	.08		.03
Sample Size	17	41	4	1	63
Females	3,420	3,746	381	42	7,589
Percent	23.36	25.59	2.60	.29	51.84
Mean Length	458	511	469	517	485
Std. Error	1	2	5		1
Sample Size	161	181	18	2	362
Mean Weight	1.51	2.16	1.56		1.83
Std. Error	.04	.08	.06		.05
Sample Size	21	26	4		51
Both Sexes	6,096	7,638	733	173	14,640
Percent	41.64	52.17	5.01	1.18	100.00
Mean Length	459	512	474	515	488
Std. Error	1	1	5	12	1
Sample Size	291	371	35	8	705
Mean Weight	1.57	2.18	1.54	2.50	1.90
Std. Error	.04	.05	.05		.03
Sample Size	38	67	8	1	114

Table 8. Age, sex, and size composition of chum salmon commercial catch in Tonsina Creek, 1988.

	Age Group				
	0.2	0.3	0.4	0.5	Total
Sample Period 1: 18 July					
Males		1,629	5,323	36	6,988
Percent		10.46	34.19	0.23	44.88
Mean Length		595	647	689	635
Std. Error		4	2		2
Sample Size		45	147	1	193
Mean Weight		3.66	4.67		4.43
Std. Error		0.12	0.23		0.18
Sample Size		5	14		19
Females		3,005	5,577		8,582
Percent		19.30	35.82		55.12
Mean Length		588	631		616
Std. Error		2	2		2
Sample Size		83	154		237
Mean Weight		3.07	4.09		3.73
Std. Error		0.13	0.11		0.08
Sample Size		14	12		26
Both Sexes		4,634	10,900	36	15,570
Percent		29.76	70.01	0.23	100.00
Mean Length		590	639	689	625
Std. Error		2	2		1
Sample Size		128	301	1	430
Mean Weight		3.28	4.37		4.05
Std. Error		0.09	0.13		0.09
Sample Size		19	26		45

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Table 8. (page 2 of 3)

	Age Group				
	0.2	0.3	0.4	0.5	Total
Sample Period 2: 19 - 25 July					
Males	26	1,594	1,621		3,241
Percent	0.31	19.18	19.50		39.00
Mean Length	532	586	648		617
Std. Error		3	3		2
Sample Size	1	61	62		124
Mean Weight		3.37	4.65		4.02
Std. Error		0.19	0.35		0.20
Sample Size		6	5		11
Females		3,162	1,908		5,070
Percent		38.05	22.96		61.00
Mean Length		581	629		599
Std. Error		2	3		2
Sample Size		121	73		194
Mean Weight		3.08	4.43		3.59
Std. Error		0.08	0.16		0.08
Sample Size		10	12		22
Both Sexes	26	4,756	3,529		8,311
Percent	0.31	57.23	42.46		100.00
Mean Length	532	583	638		606
Std. Error		2	2		1
Sample Size	1	182	135		318
Mean Weight		3.18	4.53		3.75
Std. Error		0.08	0.19		0.09
Sample Size		16	17		33

-Continued-

Table 8. (page 3 of 3)

	Age Group				
	0.2	0.3	0.4	0.5	Total
All Periods Combined					
Males	26	3,223	6,944	36	10,229
Percent	0.11	13.50	29.08	0.15	42.83
Mean Length	532	591	647	689	629
Std. Error		2	2		2
Sample Size	1	106	209	1	317
Mean Weight		3.52	4.67		4.30
Std. Error		0.11	0.20		0.14
Sample Size		11	19		30
Females		6,167	7,485		13,652
Percent		25.82	31.34		57.17
Mean Length		584	631		610
Std. Error		2	2		1
Sample Size		204	227		431
Mean Weight		3.08	4.18		3.68
Std. Error		0.07	0.09		0.06
Sample Size		24	24		48
Both Sexes	26	9,390	14,429	36	23,881
Percent	0.11	39.32	60.42	0.15	100.00
Mean Length	532	586	639	689	618
Std. Error		1	1		1
Sample Size	1	310	436	1	748
Mean Weight		3.23	4.41		3.94
Std. Error		0.06	0.11		0.07
Sample Size		35	43		78

Table 9. Age, sex, and size composition of chum salmon commercial catch in Port Dick, 1988.

	Age Group			
	0.3	0.4	0.5	Total
Sample Period 1: 21 - 29 July				
Males	6,642	16,604	221	23,467
Percent	13.02	32.54	0.43	45.99
Mean Length	622	654	653	645
Std. Error	3	3	23	2
Sample Size	60	150	2	212
Mean Weight	3.90	4.75		4.51
Std. Error	0.22	0.50		0.36
Sample Size	8	12		20
Females	10,737	16,714	111	27,562
Percent	21.04	32.75	0.22	54.01
Mean Length	609	634	655	624
Std. Error	3	2		2
Sample Size	97	151	1	249
Mean Weight	3.69	4.42		4.13
Std. Error	0.21	0.12		0.11
Sample Size	9	14		23
Both Sexes	17,379	33,318	332	51,029
Percent	34.06	65.29	0.65	100.00
Mean Length	614	644	654	634
Std. Error	2	2	23	1
Sample Size	157	301	3	461
Mean Weight	3.77	4.58		4.31
Std. Error	0.15	0.25		0.18
Sample Size	17	26		43

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Table 9. (page 2 of 3)

	Age Group			
	0.3	0.4	0.5	Total
Sample Period 2: 30 July - 4 August				
Males	1,816	2,398	109	4,323
Percent	13.58	17.94	0.82	32.34
Mean Length	605	648	683	631
Std. Error	4	3	11	2
Sample Size	50	66	3	119
Mean Weight	3.96	4.59	6.45	4.37
Std. Error	0.13	0.34		0.19
Sample Size	11	7	1	19
Females	4,359	4,505	182	9,046
Percent	32.61	33.70	1.36	67.66
Mean Length	594	628	643	612
Std. Error	2	3	22	2
Sample Size	120	124	5	249
Mean Weight	3.35	4.19		3.78
Std. Error	0.17	0.20		0.13
Sample Size	9	8		17
Both Sexes	6,175	6,903	291	13,369
Percent	46.19	51.63	2.18	100.00
Mean Length	597	635	658	618
Std. Error	2	2	14	1
Sample Size	170	190	8	368
Mean Weight	3.53	4.33	6.45	3.97
Std. Error	0.12	0.18		0.11
Sample Size	20	15	1	36

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Table 9. (page 3 of 3)

	Age Group			
	0.3	0.4	0.5	Total
All Periods Combined				
Males	8,458	19,002	330	27,790
Percent	13.13	29.51	0.51	43.15
Mean Length	618	654	663	643
Std. Error	3	2	16	2
Sample Size	110	216	5	331
Mean Weight	3.91	4.73	6.45	4.49
Std. Error	0.17	0.44		0.31
Sample Size	19	19	1	39
Females	15,096	21,219	293	36,608
Percent	23.44	32.95	0.45	56.85
Mean Length	604	632	648	621
Std. Error	2	2	22	2
Sample Size	217	275	6	498
Mean Weight	3.59	4.37		4.05
Std. Error	0.15	0.10		0.09
Sample Size	18	22		40
Both Sexes	23,554	40,221	623	64,398
Percent	36.58	62.46	0.97	100.00
Mean Length	609	642	656	630
Std. Error	2	2	13	1
Sample Size	327	491	11	829
Mean Weight	3.71	4.54	6.45	4.24
Std. Error	0.12	0.21		0.14
Sample Size	37	41	1	79

Table 10. Age, sex, and size composition of chum salmon commercial catch in Cottonwood-Iniskin, 1988.

	Age Group				Total
	0.2	0.3	0.4	0.5	
Sample period:	28 July - 15 August				
Males	192	9,786	8,347	288	18,613
Percent	0.49	24.94	21.27	0.73	47.43
Mean Length	514	600	656	673	625
Std. Error	8	2	3	18	2
Sample Size	2	102	87	3	194
Mean Weight		3.94	5.40		4.61
Std. Error		0.23	0.61		0.31
Sample Size		8	5		13
Females	192	12,664	7,771		20,627
Percent	0.49	32.27	19.80		52.57
Mean Length	550	600	649		618
Std. Error	40	2	3		2
Sample Size	2	132	81		215
Mean Weight	3.20	3.64	4.82		4.08
Std. Error		0.10	0.20		0.10
Sample Size	2	13	9		24
Both Sexes	384	22,450	16,118	288	39,240
Percent	0.98	57.21	41.08	0.73	100.00
Mean Length	532	600	653	673	622
Std. Error	20	2	2	18	1
Sample Size	4	234	168	3	409
Mean Weight	3.20	3.77	5.12		4.33
Std. Error		0.12	0.33		0.15
Sample Size	2	21	14		37

Table 11. Age, sex, and size composition of chum salmon commercial catch in McNeil River, 1988.

	Age Group			
	0.3	0.4	0.5	Total
Sample Period 1: 22 June - 1 July				
Males	1,033	17,482	2,842	21,357
Percent	3.00	50.75	8.25	62.00
Mean Length	653	697	719	698
Std. Error	8	2	6	2
Sample Size	12	203	33	248
Mean Weight		5.69	5.78	5.70
Std. Error		0.23	0.62	0.22
Sample Size		20	5	25
Females	1,292	10,592	1,206	13,090
Percent	3.75	30.75	3.50	38.00
Mean Length	625	666	683	663
Std. Error	8	2	7	2
Sample Size	15	123	14	152
Mean Weight	3.33	4.21	4.20	4.12
Std. Error	0.27	0.22		0.18
Sample Size	3	10	1	14
Both Sexes	2,325	28,074	4,048	34,447
Percent	6.75	81.50	11.75	100.00
Mean Length	637	685	708	685
Std. Error	6	2	5	1
Sample Size	27	326	47	400
Mean Weight	3.33	5.13	5.31	5.08
Std. Error	0.27	0.17	0.62	0.15
Sample Size	3	30	6	39

-Continued-

Table 11. (page 2 of 4)

	Age Group			
	0.3	0.4	0.5	Total
Sample Period 2: 2 - 14 July				
Males	2,205	27,644	2,035	31,884
Percent	3.90	48.95	3.60	56.46
Mean Length	609	663	690	661
Std. Error	7	2	9	2
Sample Size	13	163	12	188
Mean Weight	2.88	4.60		4.47
Std. Error	0.28	0.26		0.24
Sample Size	2	12		14
Females	2,374	21,369	848	24,591
Percent	4.20	37.84	1.50	43.54
Mean Length	605	645	668	642
Std. Error	7	3	16	2
Sample Size	14	126	5	145
Mean Weight	2.95	4.08	5.50	4.02
Std. Error		0.15		0.13
Sample Size	1	9	1	11
Both Sexes	4,579	49,013	2,883	56,475
Percent	8.11	86.79	5.10	100.00
Mean Length	607	655	683	653
Std. Error	5	2	8	2
Sample Size	27	289	17	333
Mean Weight	2.92	4.37	5.50	4.27
Std. Error	0.28	0.16		0.14
Sample Size	3	21	1	25

-Continued-

Table 11. (page 3 of 4)

	Age Group			
	0.3	0.4	0.5	Total
Sample Period 3: 15 - 19 July				
Males	1,418	3,848	68	5,334
Percent	10.88	29.53	0.52	40.94
Mean Length	613	652	674	642
Std. Error	7	5		4
Sample Size	21	57	1	79
Mean Weight	4.05	3.75		3.83
Std. Error	0.05	0.45		0.33
Sample Size	2	2		4
Females	1,485	6,076	135	7,696
Percent	11.40	46.63	1.04	59.06
Mean Length	605	634	685	629
Std. Error	6	3	1	3
Sample Size	22	90	2	114
Mean Weight	3.10	4.08		3.89
Std. Error		0.14		0.11
Sample Size	1	14		15
Both Sexes	2,903	9,924	203	13,030
Percent	22.28	76.16	1.56	100.00
Mean Length	609	641	681	634
Std. Error	4	3	1	2
Sample Size	43	147	3	193
Mean Weight	3.56	3.95		3.86
Std. Error	0.05	0.20		0.15
Sample Size	3	16		19

-Continued-

Table 11. (page 4 of 4)

	Age Group			
	0.3	0.4	0.5	Total
All Periods Combined				
Males	4,656	48,974	4,945	58,575
Percent	4.48	47.11	4.76	56.35
Mean Length	620	674	706	673
Std. Error	4	2	5	1
Sample Size	46	423	46	515
Mean Weight	3.34	4.92	5.78	4.86
Std. Error	0.17	0.17	0.62	0.16
Sample Size	4	34	5	43
Females	5,151	38,037	2,189	45,377
Percent	4.96	36.59	2.11	43.65
Mean Length	610	649	677	646
Std. Error	4	2	8	2
Sample Size	51	339	21	411
Mean Weight	3.09	4.12	4.74	4.03
Std. Error	0.27	0.11		0.09
Sample Size	5	33	2	40
Both Sexes	9,807	87,011	7,134	103,952
Percent	9.43	83.70	6.86	100.00
Mean Length	615	663	697	661
Std. Error	3	1	4	1
Sample Size	97	762	67	926
Mean Weight	3.19	4.57	5.34	4.49
Std. Error	0.14	0.11	0.62	0.09
Sample Size	9	67	7	83

Table 12. Mean weight of commercial chum catch,
Silver Beach and Kamishak, 1988.

Date	Silver Beach		Kamishak	
	Number	Mean Wt (kg)	Number	Mean Wt (kg)
Jun 19			11	4.54
25			790	4.95
26	2	3.63		
30			1,844	4.97
Jul 1			7,241	4.78
2			1,175	5.26
7	2,849	4.43		
8	314	4.76	362	4.34
11	3,141	4.44	1,743	4.30
12	575	4.89	9,988	4.35
14			6,505	4.49
15	2,636	4.30	1,827	4.10
16	165	4.55		
19	1,915	3.64	3,090	3.64
21	4,236	4.21	2,028	3.83
22	3,819	4.09	9,218	4.10
23			44	4.19
	19,652		45,866	

Table 13. Age, sex, and size composition of chum salmon commercial catch in Silver Beach, 1988.

	Age Group			Total
	0.3	0.4	0.5	
Sample period:	11 July			
Males				
Percent	21.50	32.80	1.00	55.30
Mean Length	629	661	663	649
Std. Error	3	3	7	2
Sample Size	87	133	4	224
Mean Weight	4.39	5.20		4.88
Std. Error	0.18	0.21		0.14
Sample Size	9	15		24
Females				
Percent	11.60	31.60	1.50	44.70
Mean Length	609	637	636	630
Std. Error	4	2	7	2
Sample Size	47	128	6	181
Mean Weight	3.45	3.89	4.60	3.80
Std. Error	0.27	0.16		0.13
Sample Size	6	11	1	18
Sexes Combined				
Percent	33.10	64.40	2.50	100.00
Mean Length	622	650	647	640
Std. Error	2	2	5	1
Sample Size	134	261	10	405
Mean Weight	4.06	4.56	4.60	4.39
Std. Error	0.15	0.13		0.10
Sample Size	15	26	1	42

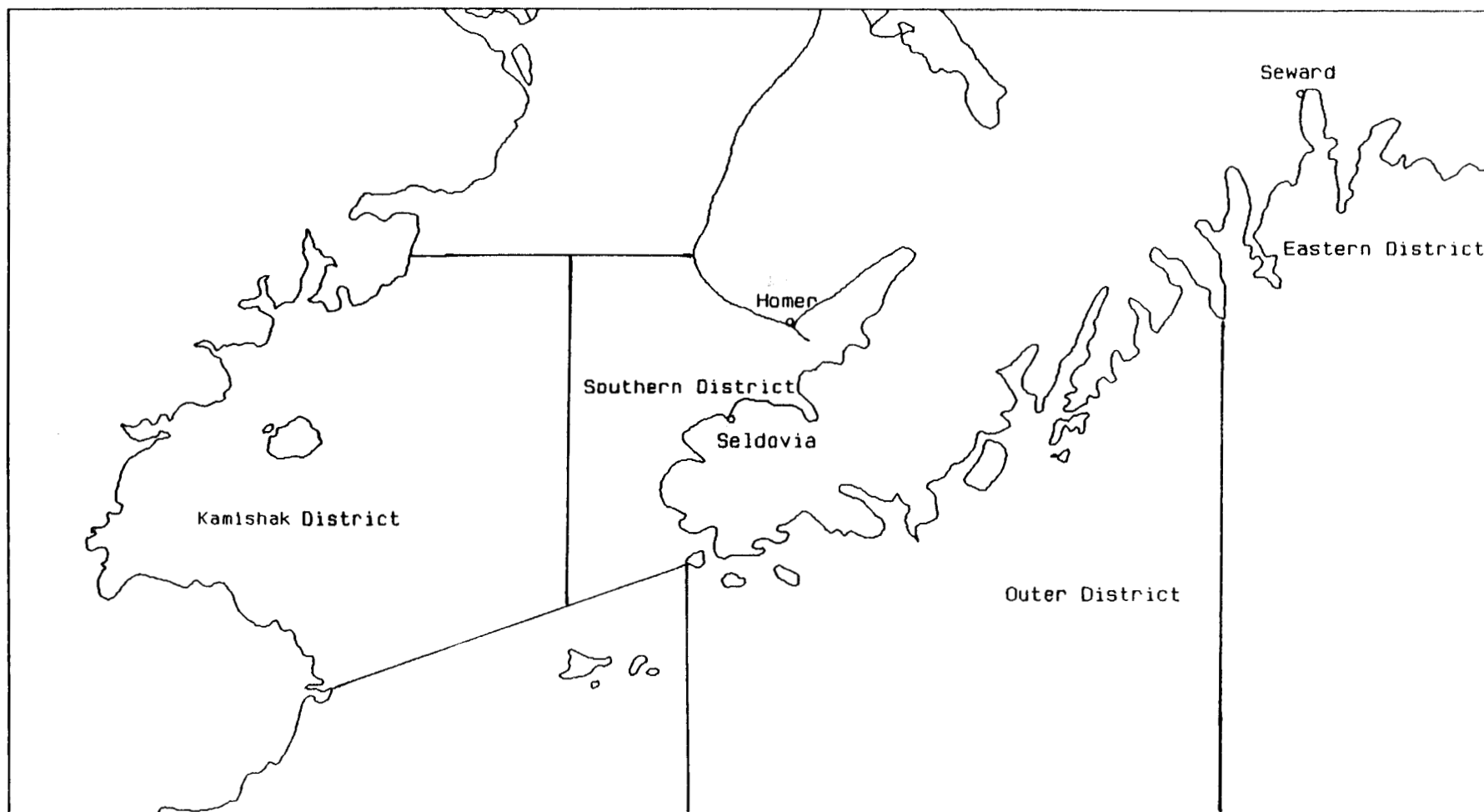


Figure 1. Kamishak, Southern, Outer, and Eastern Districts of Lower Cook Inlet Management Area.

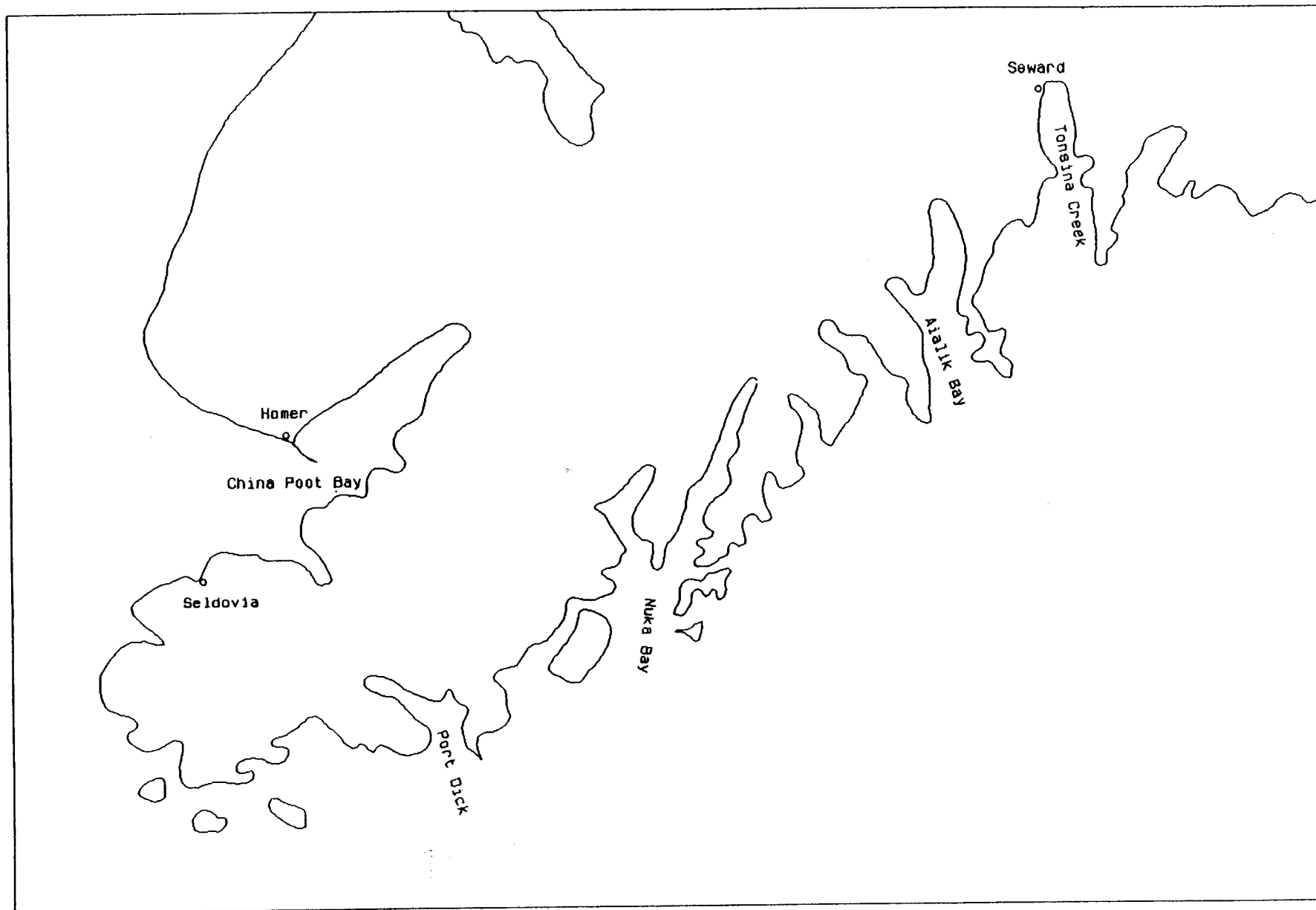


Figure 2. Salmon catch sampling sites in the Southern, Outer, and Eastern Districts, 1988.

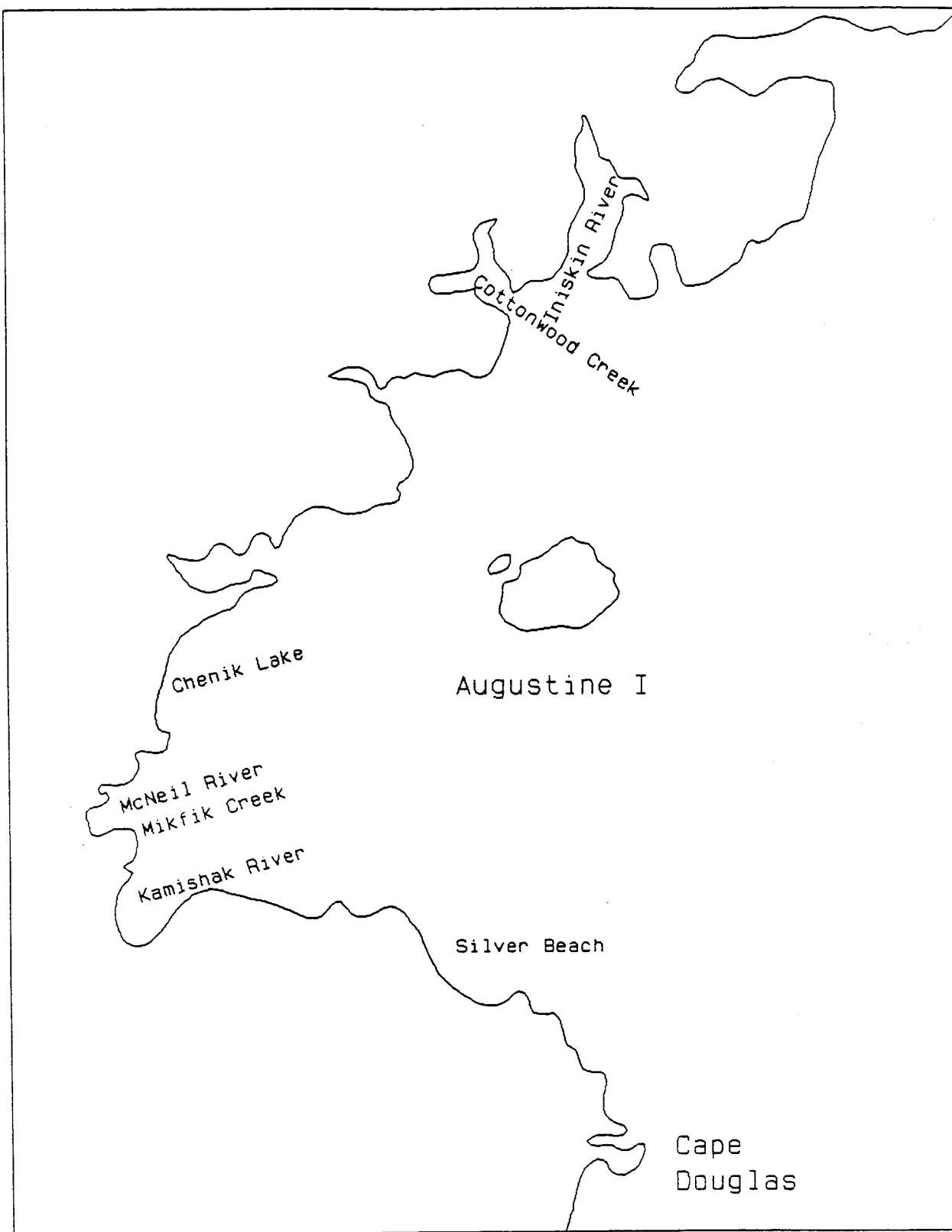


Figure 3. Salmon catch sampling sites in the Kamishak District, 1988.

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